

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 146 367 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
12.05.2004 Bulletin 2004/20

(51) Int Cl.7: **G02B 6/38**

(43) Date of publication A2:
17.10.2001 Bulletin 2001/42

(21) Application number: **01104525.9**

(22) Date of filing: **02.03.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Naghski, David H.**
Lewisberry, Pennsylvania 17339 (US)
• **Mentzer, Mark A.**
Lititz, Pennsylvania (US)

(30) Priority: **06.03.2000 US 518824**

(74) Representative: **Beetz & Partner Patentanwälte**
Steinsdorfstrasse 10
80538 München (DE)

(71) Applicant: **BERG ELECTRONICS
MANUFACTURING B.V.**
5202 CB'S-Hertogenbosch (NL)

(54) **Angled optical connector**

(57) An angled optical connector (10) optically couples received first and second optical blocks (12), each of which has an optical fiber (12a) embedded therein which terminates at an optical block end face (12b). The connector (10) has corresponding first and second ports (14) and a reflecting surface (22). In one embodiment, each port (14) has a port optical block (16) which includes an optical fiber (16a) embedded therein which extends between and terminates at first and second port optical block end faces (16b). The first port optical block end face (16b) is aligned with the corresponding received optical block end face (12b) such that the port optical block optical fiber (16a) as terminating at the first end face (16b) thereof is aligned with the corresponding received optical block optical fiber (12a) as terminating at the end face (12b) thereof. A lens (20) aligns with each port optical block optical fiber (16a) as terminating at the second end face (16b) of such port optical block (16) for collimating light exiting or entering such optical fiber (16a). The reflecting surface (22) is aligned to reflect collimated light from the port optical block optical fiber (16a) of the first port (14) to the port optical block optical fiber (16a) of the second port (14). In another embodiment, each lens (20) aligns directly with the optical fiber (12a) of the corresponding received optical block (12). In a further embodiment, each lens is dispensed with such that light reflects directly from the first port optical block (16) to the second port optical block (16).

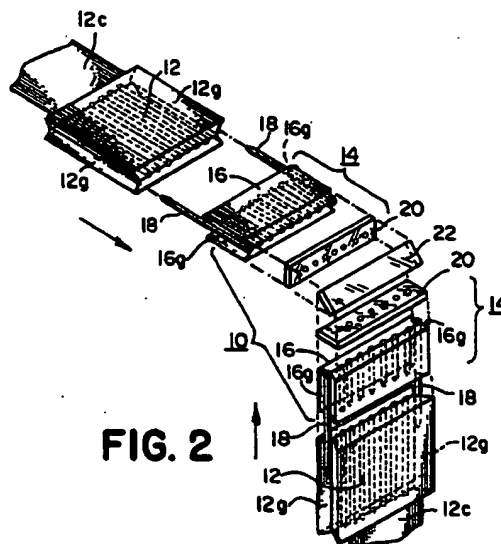


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 10 4525

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 5 682 449 A (TAIRA-GRIFFIN LAURIE KEIKO) 28 October 1997 (1997-10-28) * figures 1,2 *	1-10	G02B6/38
X	US 4 078 852 A (LEBDUSKA ROBERT L) 14 March 1978 (1978-03-14) * figures 2,4 *	11-14	
Y	---	1-10	
X	DE 195 26 442 A (DEUTSCHE TELEKOM AG) 30 January 1997 (1997-01-30) * figure 1 *	15	
Y	---	16	
Y	US 5 037 173 A (MCDONALD TERRANCE G ET AL) 6 August 1991 (1991-08-06) * figures 8B,11,13 *	1-10,16	
Y	US 5 757 994 A (PECK JR JAMES L ET AL) 26 May 1998 (1998-05-26) * figures 6,7 *	2,8	
Y	US 5 371 820 A (WELBOURN ANTHONY D ET AL) 6 December 1994 (1994-12-06) * figures 3,4,12 * * column 5, line 63 - line 67 * * column 6, line 52 - line 54 * -----	5-10	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G02B
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 17 March 2004	Examiner Beutter, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 10 4525

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-03-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5682449	A	28-10-1997	NONE	
US 4078852	A	14-03-1978	NONE	
DE 19526442	A	30-01-1997	DE 19526442 A1	30-01-1997
US 5037173	A	06-08-1991	JP 3223728 A	02-10-1991
US 5757994	A	26-05-1998	NONE	
US 5371820	A	06-12-1994	AU 642512 B2	21-10-1993
			AU 8109591 A	23-01-1992
			CA 2085596 A1	03-01-1992
			DE 69132083 D1	04-05-2000
			DE 69132083 T2	02-11-2000
			EP 0537237 A1	21-04-1993
			WO 9200538 A1	09-01-1992
			JP 3117708 B2	18-12-2000
			JP 5508032 T	11-11-1993

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82